

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Group Art Unit 3746

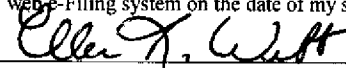
Appl. No. : 10/730,747
Confirmation No. : 2653
Applicant : Robert M. Kochl

Filed : December 8, 2003
Title : PUMP CONTROL SYSTEM
AND METHOD

TC/A.U. : 3746
Examiner : Vikansha S. Dwivedi

Docket No. : 105196.012000

I, Ellen R. Webb, hereby certify that this correspondence is being transmitted electronically to the United States Patent and Trademark Office via the EFS web e-Filing system on the date of my signature.


Signature

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Date of Signature

APPEAL BRIEF

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Appellant hereby submits this Appeal Brief in connection with the appeal to the Board of Patent Appeals and Interferences from the Examiner's final rejection of Claims 28 and 87 which rejection was set forth in the Office Action mailed February 19, 2009.

A Notice of Appeal has been filed.

This Appeal Brief is being filed electronically via EFS-Web.

The Commissioner is hereby authorized to charge any fee deficiency to deposit account number 50-2638 in the name of Greenberg Traurig.

I. Real Party In Interest

The real party in interest is Sta-Rite Industries, Inc.

II. Related Appeals And Interferences

Appellant does not believe that there are any appeals, interferences, or judicial proceedings which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the subject appeal.

III. Status of the Claims

Pending Claims 28 and 87 stand rejected and are the subject of this appeal. Claims 1-27 and 29-86 have been canceled. Section VIII entitled "Claims Appendix" attached below provides a clean, double spaced copy of pending Claims 28 and 87.

IV. Status of Amendments

The claims are in condition for appeal – no amendments to the claims are pending.

V. Summary of the Claimed Subject Matter

In accordance with 37 CFR § 41.37(c)(1)(v), the following provides a concise explanation of the subject matter defined in the independent claims involved in the appeal with reference, by way of example only, to the specification by paragraph numbers and to the drawings by reference characters:

A. **Independent Claim 28** is generally directed to a method of operating a motor 16 of a pump 10 (Figure 1) for use with at least one of a pool and a spa (paragraph [0026]), the method comprising:

measuring (at step 204) an AC line current (*e.g.*, AC bus line 22) (paragraphs [0038], [0040], and [0076], Figure 4);

determining (at step 216) whether the AC line current (*e.g.*, AC bus line 22) is greater than a programmed threshold due to a foreign object obstruction in at least one of the pool and the spa (paragraphs [0076] and [0077], Figure 4);

automatically reducing (at step 212) at least one of an output voltage provided to the motor and an operating frequency of the motor if the AC line current is greater (at step 216) than the programmed threshold in order to drive (at step 210) the motor in a limp mode in an attempt to clear the foreign object obstruction (paragraphs [0076] and [0077], Figure 4); and

automatically shutting down (at step 224) the motor within up to about 30 seconds if the motor does not operate (at step 222) within operational limits while being driven in the limp mode and the foreign object obstruction cannot be cleared (paragraphs [0079], [0080], [0082], [0085], Figure 4).

B. Independent Claim 87 is generally directed to a method of operating a motor 16 of a pump 10 (Figure 1) for use with at least one of a pool and a spa (paragraph [0026]), the method comprising:

measuring a parameter including at least one of

an actual pressure (*e.g.*, with the pressure sensor 18) (at step 150, paragraph [0069], Figure 3), (at step 550, paragraphs [0087] and [0088], Figure 11),

a bus current (*e.g.*, from the AC bus line 22 or the DC bus line 48) (at step 200, paragraph [0076], Figure 4), (at step 350, paragraph [0083], Figure 7), (at step 450, paragraph [0085], Figure 9),

a bus voltage (*e.g.*, from the AC bus line 22) (at step 202, paragraph [0076], Figure 4), (at step 250, paragraph [0081], Figure 5),

a line current (*e.g.*, from the DC bus line 48) (at step 204, paragraph [0076], Figure 4),

a temperature of a heat sink (*e.g.*, with the temperature sensor 19 on the heat sink 21) (at step 206, paragraph [0076], Figure 4), (at step 400, paragraph [0084], Figure 8), and

a speed of the motor 16 (at step 450, paragraph [0085], Figure 9), (at step 500, paragraph [0086], Figure 10);

determining if the parameter is outside of a range of programmed thresholds due to a foreign object obstruction in at least one of the pool and the spa (at any one or more of steps 152, 208, 214, 216, 218, 252, 302, 352, 402, 450, 500, and 554) (paragraphs [0069], [0076]-[0078], and [0081]-[0087], Figures 4-11);

executing an automatic recovery operation if the parameter is outside of the range of programmed thresholds in an attempt to clear the foreign object obstruction, the automatic recovery operation including at least one of generating an updated speed control command (at step 164, paragraph [0069], Figure 3), driving the motor in a limp mode (at step 210, paragraph [0076], Figure 4), shutting down the motor for up to about 30 seconds and then restarting the motor (at one or more of steps 256, 306, 364, 406, and 556, paragraphs [0081]-[0084] and [0087], Figures 5-8 and 11), and operating the motor in a reverse direction for up to about 30 seconds and then operating the motor in a forward direction (at one or more of steps 464 and 508, paragraphs [0085]-[0086], Figures 9-10); and

automatically shutting down the motor within up to about 30 seconds if the recovery operation fails and the foreign object obstruction cannot be cleared (at one or more of steps 224, 462, 506, and 560, paragraphs [0079] and [0085]-[0087], Figures 4 and 9-11).

VI. Grounds of Rejection to be Reviewed on Appeal

In the Office Action of February 19, 2009: Claims 28 and 87 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Markuson et al. (United States Patent No. 4,767,280) in view of Struthers (United States Patent No. 6,481,973) and McDonough (United States Patent No. 6,227,808). Appellant hereby requests independent review of the rejection of Claim 28 and the rejection of Claim 87.

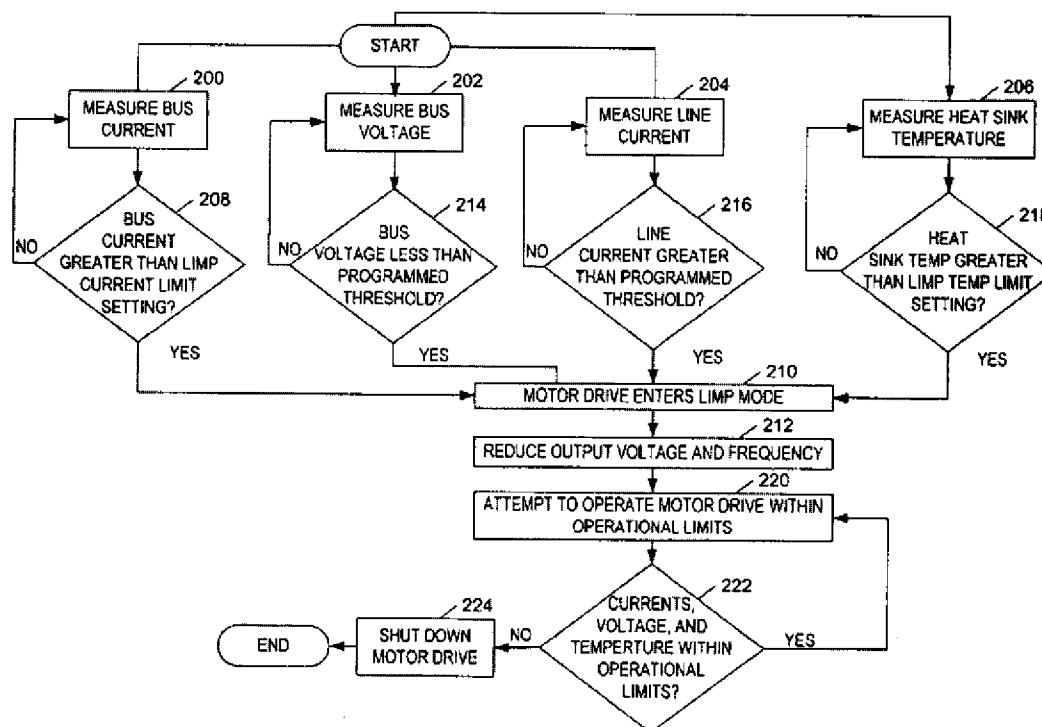
VII. Argument

A. **Applicable Law**

It is respectfully submitted that, among other things, to establish a *prima facie* case of obviousness under 35 U.S.C. § 103(a) it must be demonstrated that all of the elements claimed are taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Furthermore, when making a determination of obviousness, it is impermissible to pick and chose among isolated disclosures in the prior art. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Rather, a prior art reference must be considered in its entirety, *i.e.*, as a whole, including portions that would lead away from the invention claimed. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

B. **Argument Regarding Independent Claim 28 - The combination of the three cited references does not teach shutting down the motor within 30 seconds after the pump cannot be driven within operational limits in a limp mode and a foreign object obstruction cannot be cleared. The three cited references teach away from each other and from the subject matter of Claim 28.**

Independent Claim 28 is directed toward a method of operating a motor of a pump for use with a pool and/or spa by determining whether an AC line current is greater than a programmed threshold due to a foreign object obstruction. Independent Claim 28 specifies “automatically shutting down the motor within up to about 30 seconds if the motor does not operate within operational limits while being driven in the limp mode and the foreign object obstruction cannot be cleared.” One example of such a method is illustrated in Figure 4 of the subject application (reproduced below) and as described in paragraphs [0076] to [0078].



In summary, while independent Claim 28 specifies shutting down the motor within 30 seconds if the motor does not operate within operational limits at a reduced voltage or frequency, Markuson teaches a system in which the motor continues to run in a normal mode and service personnel must attend to it before it breaks down. Struthers teaches a system in which the motor is run at multiple speeds (including a reduced speed, an increased speed, and backward-forward jogs) and then is finally shut down only after five minutes has elapsed. Conversely, McDonough teaches a system in which the motor is immediately shut off rather than first being run at a reduced voltage or frequency.

More specifically, Markuson teaches a controller 10 that monitors power consumption of a pump motor 2 for use in pumping petroleum from beneath the surface of the earth. The controller 10 of Markuson provides indications of operating conditions for the pump motor 2. When the controller 10 detects an overload condition, the controller 10 merely switches an appropriate indicator light on and starts a timer. Markuson teaches that service personnel must then manually react to the indicator light before the pump becomes stuck and the motor is forced

to shut down. *Markuson*, Abstract; col. 4, lines 4-7; col. 5, lines 3-11; col. 5, lines 33-53; col. 6, lines 37-41; col. 6, line 59 to col. 7, line 44.

However, with respect to Claim 28, *Markuson* does not teach or suggest reducing the output voltage to the pump motor 2 or reducing the operating frequency of the pump motor 2 when the controller 10 detects an overload condition. Rather, *Markuson* teaches that a human being must see an indicator light and react before the pump gets stuck and the motor is “killed.” Thus, *Markuson* does not teach or suggest at least the claimed elements of automatically reducing an output voltage or operating frequency to run the motor in a limp mode and automatically shutting down the motor within 30 seconds if the pump motor does not operate within operational limits while being driven in the limp mode, as has been asserted and relied upon in the rejection of Claim 28.

First, it was acknowledged that *Markuson* “does not disclose the reduction of the operating frequency of the motor nor the specific use of current and limp current limit setting.” *Office Action*, mailed February 19, 2009, page 3. Regarding the real-time power graph of Figure 2 of *Markuson*, the following has been asserted:

Figure 2 is an illustration of operating conditions being monitored by the controller. It shows the limp mode/underload (18, near 30) conditions with respect to the normal run as shown in Figure 2. Figure 2 also shows that the motor is turned off after running in limp mode/underload situation (See circa element number 30).

Office Action, mailed February 19, 2009, page 3.

However, the motor 2 of *Markuson* is not actually turned off by the controller or run in a limp mode. *Markuson* teaches that “power consumption can be seen to continue upward until position 29 [near position 30] where the pump stuck and the motor killed.” *Markuson*, col. 5, lines 49-51. In that situation, the motor 2 was not automatically turned off, but rather, the motor 2 broke down. In addition, *Markuson* teaches the following regarding the real-time power graph of Figure 2:

Location 26 of FIG. 2 shows when the oil well tubing was replaced, and position 27 shows that power consumption appears normal again. Many other problems

can similarly be detected by noting when power consumption dips. Position 30 shows the detection of an underload condition which is corrected in position 31 by reducing the amount of iron sulfide in the pump.

Markuson, col. 6, lines 6-15.

At position 26 and position 31 (directly after position 30) on the real-time power graph of Figure 2, the motor 2 has been manually turned off by service personnel so that they can repair the pump. Also, power consumption only dips because of a problem with the pump, not because the controller 10 reduces the power to the motor 2 in order to run the motor 2 in a limp mode. It is thus respectfully submitted that the comments set forth in the Office Action do not demonstrate that Markuson teaches operating the motor 2 in a limp mode or shutting down the motor 2 following a limp mode.

In summary, while Markuson may generally teach a controller determining if motor power consumption has risen above a threshold, it is respectfully submitted that Markuson fails to teach or suggest claimed elements of Claim 28 including “automatically shutting down the motor within up to about 30 seconds if the motor does not operate within operational limits while being driven in the limp mode and the foreign object obstruction cannot be cleared.”

Turning now to Struthers, it has been asserted that Struthers teaches the control of motor operating frequency using current as the parameter upon which control is based. It has further been asserted that it would have been obvious for the controller of Markuson to use operating frequency as one of the controlling parameters, as taught by Struthers (citing *Struthers*, col. 5, lines 9-30). First, Struthers teaches using torque (not current) as the parameter upon which motor control is based. Struthers only teaches that current may be monitored and recorded for maintenance purposes. *Struthers*, col. 9, lines 31-35. Second, while Struthers does generally teach controlling the operating frequency of a motor, Struthers does not cure the deficiencies of Markuson. Third, although Struthers is only relied upon to teach the control of motor operating frequency, it is further noted that Struthers cannot be used to teach or suggest any other element of Claim 28 not taught by Markuson.

More specifically, Struthers teaches a method of operating a variable speed pump 54 for emptying drainage sumps in a residential basement. The pump 54 uses sensors 42 and a controller 22 to monitor the speed and torque of a motor 12. The controller 22 can determine that the pump 54 is clogged “by detecting that the motor 12 is developing an unacceptably high torque.” *Struthers*, col. 8, lines 1-2. If the controller 22 determines that the pump 54 is clogged, Struthers teaches that the pump unit 10 will perform a series of steps (steps 126-152, as shown in Figure 5B) to unclog the pump 54. First, the motor speed is shifted down (step 134) until it reaches its lowest speed (step 142). Once it reaches its lowest speed, the motor 12 performs a series of three backwards-forwards jogs (steps 144-146). The final steps include running the motor 12 at the highest speed possible (step 148) until either the tank 84 is dry (step 150) or until five minutes has expired (step 152). Only after the tank 84 is dry or five minutes has expired will the pump 54 be turned off (steps 154, 125). *Struthers*, col. 3, lines 1-47; col. 5, lines 18-30; col. 7, line 60 to col. 8, line 2; Figure 2; and Figure 5B.

While Struthers teaches initially reducing the speed of the motor 12, Struthers does not teach automatically shutting down the motor 12 within 30 seconds if the motor 12 does not operate within operational limits while being operated at the reduced speed. Rather, Struthers only teaches performing “a sequence of short bursts of forward and/or reverse motor power.” In summary, Struthers ultimately only teaches taking at least five minutes to shut down the motor 12 when an unacceptably high torque is detected. In contrast, the subject matter of Claim 28 results in the motor being shut down within 30 seconds in order to help prevent bodily harm as a result of a foreign object obstruction in a pool or spa system.

Turning now to McDonough, it has been asserted that McDonough teaches a pump for use within a spa and that the pump is immediately shut off when obstructed, which has been asserted as being within 30 seconds. First, while McDonough does generally teach a spa pump that is immediately shut off when there is an obstruction, McDonough does not cure the deficiencies of Markuson and Struthers. Second, although McDonough is only relied upon to teach a spa pump, it is further noted that McDonough cannot be used to teach or suggest any other element of Claim 28 not taught by Markuson or Struthers.

More specifically, McDonough teaches a control circuit 26 for use with a pump 20 for a spa system. The control circuit 26 includes a pressure sensor 70 to monitor pressure at the input side of the pump 20. The control circuit 26 also includes an on/off switch 40 which can be activated by a user to turn the pump 20 on. Once the pump 20 is turned on, a baseline pressure is acquired. If, during operation, a decrease or increase in pressure from the baseline pressure occurs, the pump 20 immediately shuts off. *McDonough*, Abstract; col. 3, lines 51-52; col. 4, lines 17-22; col. 7, lines 11-15; col. 7, lines 43-50. However, McDonough does not teach reducing an output voltage or operating frequency to run the motor of the pump 20 in a limp mode or automatically shutting down the motor of the pump 20 within 30 seconds if the motor of the pump 20 does not operate within operational limits while being driven in the limp mode.

With respect to the combination of the three cited references, McDonough teaches away from the subject matter of Claim 28 and from the teachings of Struthers. McDonough teaches immediately shutting off the motor of a pump after sensing a pressure above or below the baseline pressure. Immediately shutting down the motor as taught by McDonough will result in frequent, and often false, shutdowns of the motor. Also, the operation taught by McDonough is not suitable for combination with the operation taught by Struthers, because Struthers teaches shutting down the motor only after at least five minutes has expired. As a result, Struthers and McDonough cannot be combined to arrive at the subject matter of Claim 28, because the intended function of each reference would be destroyed by such a combination. In addition, neither Markuson's nor McDonough's methods teach or suggest operating a motor in an attempt to clear a foreign object obstruction, as also specified by Claim 28. Moreover, neither Markuson nor Struthers contemplates a foreign object obstruction in a pool or spa system, as further specified by Claim 28.

Therefore, it is evident that none of Markuson, Struthers, or McDonough teaches or suggests "automatically shutting down the motor within up to about 30 seconds if the motor does not operate within operational limits while being driven in the limp mode and the foreign object obstruction cannot be cleared," as specified by Claim 28. Accordingly, it is respectfully submitted that the combination of Markuson, Struthers, and McDonough cannot be said to teach each and every element claimed as is required of a *prima facie* case of obviousness. For at least

this reason, it is respectfully submitted that the rejection of Claim 28 under 35 U.S.C. § 103 based upon Markuson in view of Struthers and McDonough must be withdrawn.

C. Argument Regarding Independent Claim 87 - The combination of the three cited references does not teach shutting down the motor within 30 seconds after an automatic recovery operation is executed but a foreign object obstruction cannot be cleared. The three cited references teach away from each other and from the subject matter of Claim 87.

Independent Claim 87 is directed toward a method of operating a motor of a pump for use with a pool and/or a spa by determining if a parameter (such as actual pressure, bus current, bus voltage, line current, heat sink temperature, and motor speed) is outside of a range of programmed thresholds due to a foreign object obstruction. Independent Claim 87 specifies “executing an automatic recovery operation if the parameter is outside of the range of programmed thresholds in an attempt to clear the foreign object obstruction.” Claim 87 also specifies “automatically shutting down the motor within up to about 30 seconds if the recovery operation fails and the foreign object obstruction cannot be cleared.” Some examples of such a method are shown and described with respect to Figures 4-11 of the subject application.

In summary, while independent Claim 87 is directed to first executing an automatic recovery operation and then shutting down the motor within 30 seconds if the recovery operation fails, Markuson teaches a system in which the motor continues to run in a normal mode and service personnel must attend to it before it breaks down. Struthers teaches a system in which the motor is run at multiple speeds (including a reduced speed, an increased speed, and backward-forward jogs) and then is finally shut down only after five minutes has elapsed. Conversely, McDonough teaches a system in which the motor is immediately shut off rather than first executing an automatic recovery operation.

More specifically, Markuson teaches a controller 10 that monitors power consumption of a pump motor 2 for use in pumping petroleum from beneath the surface of the earth. The controller 10 of Markuson provides indications of operating conditions for the pump motor 2. When the controller 10 detects an overload condition, the controller 10 merely switches an appropriate indicator light on and starts a timer. Markuson teaches that service personnel must

then manually react to the indicator light before the pump becomes stuck and the motor is forced to shut down. *Markuson*, Abstract; col. 4, lines 4-7; col. 5, lines 3-11; col. 5, lines 33-53; col. 6, lines 37-41; col. 6, line 59 to col. 7, line 44.

However, with respect to Claim 87, Markuson does not teach or suggest executing an automatic recovery operation if the controller 10 detects an overload condition. Rather, Markuson teaches that a human being must see an indicator light and react before the pump gets stuck and the motor is “killed.” Thus, Markuson does not teach or suggest the claimed elements of executing an automatic recovery operation and automatically shutting down the motor, as has been asserted and relied upon in the rejection of Claim 87.

Regarding the real-time power graph of Figure 2 of Markuson, the following has been asserted:

Figure 2 is an illustration of operating conditions being monitored by the controller. It shows the limp mode/underload (18, near 30) conditions with respect to the normal run as shown in Figure 2. Figure 2 also shows that the motor is turned off after running in limp mode/underload situation (See circa element number 30).

Office Action, mailed February 19, 2009, page 3.

However, the motor 2 of Markuson is not actually turned off by the controller 10. Markuson teaches that “power consumption can be seen to continue upward until position 29 [near position 30] where the pump stuck and the motor killed.” *Markuson*, col. 5, lines 49-51. In that situation, the motor 2 was not automatically turned off, but rather, the motor 2 broke down. In addition, Markuson teaches the following regarding the real-time power graph of Figure 2:

Location 26 of FIG. 2 shows when the oil well tubing was replaced, and position 27 shows that power consumption appears normal again. Many other problems can similarly be detected by noting when power consumption dips. Position 30 shows the detection of an underload condition which is corrected in position 31 by reducing the amount of iron sulfide in the pump.

Markuson, col. 6, lines 6-15.

At position 26 and position 31 (directly after position 30) on the real-time power graph of Figure 2, the motor 2 has been manually turned off by service personnel so that they can repair the pump. Also, power consumption only dips because of a problem with the pump, not because the controller 10 tries to execute an automatic recovery operation. It is thus respectfully submitted that the comments set forth in the Office Action do not demonstrate that Markuson teaches executing an automatic recovery operation or shutting down the motor 2 if an automatic recovery operation fails.

In summary, while Markuson may generally teach a controller determining if motor power consumption has risen above a threshold, it is respectfully submitted that Markuson fails to teach or suggest claimed elements of Claim 87 including “executing an automatic recovery operation if the parameter is outside of the range of programmed thresholds in an attempt to clear the foreign object obstruction” and “automatically shutting down the motor within up to about 30 seconds if the recovery operation fails and the foreign object obstruction cannot be cleared.”

Turning now to Struthers, it has been asserted that Struthers teaches the control of motor operating frequency and using current as the parameter upon which control is based. It has further been asserted that it would have been obvious for the controller of Markuson to use operating frequency as one of the controlling parameters, as taught by Struthers (citing *Struthers*, col. 5, lines 9-30). First, Struthers teaches using torque (not actual pressure, bus current, bus voltage, line current, temperature, or speed) as the parameter upon which control is based. Struthers only teaches that current may be monitored and recorded for maintenance purposes. *Struthers*, col. 9, lines 31-35. Second, Struthers also does not cure the deficiencies of Markuson discussed above. Although Struthers is only relied upon to teach control of motor operating frequency, it is further noted that Struthers can not be used to teach or suggest any other elements of Claim 28 not taught by Markuson.

More specifically, Struthers teaches a method of operating a variable speed pump 54 for emptying drainage sumps in a residential basement. The pump 54 uses sensors 42 and a controller 22 to monitor the speed and torque of a motor 12. The controller 22 can determine that the pump 54 is clogged “by detecting that the motor 12 is developing an unacceptably high

torque.” *Struthers*, col. 8, lines 1-2. If the controller 22 determines that the pump 54 is clogged, *Struthers* teaches that the pump unit 10 will perform a series of steps (steps 126-152, as shown in Figure 5B) to unclog the pump 54. First, the motor speed is shifted down (step 134) until it reaches its lowest speed (step 142). Once it reaches its lowest speed, the motor 12 performs a series of three backwards-forwards jogs (steps 144-146). The final steps include running the motor 12 at the highest speed possible (step 148) until either the tank 84 is dry (step 150) or until five minutes has expired (step 152). Only after the tank 84 is dry or five minutes has expired will the pump 54 be turned off (steps 154, 125). *Struthers*, col. 3, lines 1-47; col. 5, lines 18-30; col. 7, line 60 to col. 8, line 2; Figure 2; and Figure 5B.

While *Struthers* teaches initially reducing the speed of the motor 12, *Struthers* does not teach automatically shutting down the motor within 30 seconds if an automatic recovery operation fails. Rather, *Struthers* only teaches performing a sequence of short bursts of forward and/or reverse motor power. In summary, *Struthers* ultimately only teaches taking at least five minutes to shut down the motor 12 when an unacceptably high torque is detected. In contrast, the subject matter of Claim 87 results in the motor being shut down within 30 seconds in order to help prevent bodily harm as a result of a foreign object obstruction in a pool or spa system.

Turning now to McDonough, it has been asserted that McDonough teaches a pump for use with a spa and that the pump is immediately shut off when there is an obstruction, which has been asserted as being within 30 seconds. First, while McDonough does generally teach a spa pump that is immediately shut off when there is an obstruction, McDonough does not cure the deficiencies of Markuson and *Struthers*. Second, although McDonough is only relied upon to teach a pump for use with a spa, it is further noted that McDonough cannot be used to teach or suggest any other element of Claim 87 not taught by Markuson or *Struthers*.

More specifically, McDonough teaches a control circuit 26 for use with a pump 20 for a spa system. The control circuit 26 includes a pressure sensor 70 to monitor pressure at the input side of the pump 20. The control circuit 26 also includes an on/off switch 40 which can be activated by a user to turn the pump 20 on. Once the pump 20 is turned on, a baseline pressure is acquired. If, during operation, a decrease or increase in pressure from the baseline pressure

occurs, the pump 20 immediately shuts off. *McDonough*, Abstract; col. 3, lines 51-52; col. 4, lines 17-22; col. 7, lines 11-15; col. 7, lines 43-50. However, McDonough does not teach executing any type of automatic recovery operation or automatically shutting down the motor within 30 seconds only if the automatic recovery operation fails. In addition, McDonough does not determine if the pressure is outside of a range of “programmed thresholds.” Rather, McDonough acquires a new baseline pressure each time the pump 20 is turned on, resulting in a constantly-changing pressure threshold.

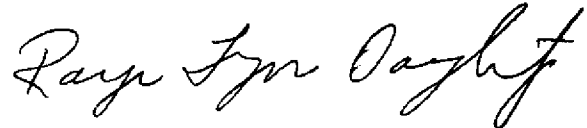
With respect to the combination of the three cited references, McDonough teaches away from the subject matter of Claim 87 and from the teachings of Struthers. McDonough teaches immediately shutting off the motor of a pump after sensing a pressure above or below the baseline pressure. Immediately shutting down the motor as taught by McDonough will result in frequent, and often false, shutdowns of the motor. Also, the operation taught by McDonough is not suitable for combination with the operation taught by Struthers, because Struthers teaches shutting down the motor only after five minutes has expired. As a result, Struthers and McDonough cannot be combined to arrive at the subject matter of Claim 87, because the intended function of each reference would be destroyed by such a combination. In addition, neither Markuson’s nor McDonough’s methods teach or suggest operating a motor in an attempt to clear a foreign object obstruction, as also specified by Claim 87. Moreover, neither Markuson nor Struthers contemplates a foreign object obstruction in a pool or spa system, as further specified by Claim 87.

Therefore, it is evident that none of Markuson, Struthers, or McDonough teaches or suggests “executing an automatic recovery operation if the parameter is outside of the range of programmed thresholds in an attempt to clear the foreign object obstruction” and “automatically shutting down the motor within up to about 30 seconds if the recovery operation fails and the foreign object obstruction cannot be cleared,” as specified by Claim 87. Accordingly, it is respectfully submitted that the combination of Markuson, Struthers, and McDonough cannot be said to teach each and every element claimed as is required of a *prima facie* case of obviousness. For at least this reason, it is respectfully submitted that the rejection of Claim 87 under 35 U.S.C. § 103 based upon Markuson in view of Struthers and McDonough must be withdrawn.

D. Conclusion

For the reasons set forth above, it is respectfully submitted that the subject application stands in condition for allowance.

Respectfully Submitted;

A handwritten signature in cursive script, reading "Raye Lynn Daugherty".

Raye Lynn Daugherty
Reg. No. 47,933

Docket No. 105196.012000
Greenberg Traurig, LLP
2450 Colorado Avenue, Ste. 400E
Santa Monica, CA 90404
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VIII. Claims Appendix

The following is a clean copy of the claims involved in the appeal:

Listing of Claims

28. A method of operating a motor of a pump for use with at least one of a pool and a spa, the method comprising:

measuring an AC line current;

determining whether the AC line current is greater than a programmed threshold due to a foreign object obstruction in at least one of the pool and the spa;

automatically reducing at least one of an output voltage provided to the motor and an operating frequency of the motor if the AC line current is greater than the programmed threshold in order to drive the motor in a limp mode in an attempt to clear the foreign object obstruction; and

automatically shutting down the motor within up to about 30 seconds if the motor does not operate within operational limits while being driven in the limp mode and the foreign object obstruction cannot be cleared.

87. A method of operating a motor of a pump for use with at least one of a pool and a spa, the method comprising:

measuring a parameter including at least one of an actual pressure, a bus current, a bus voltage, a line current, a temperature of a heat sink, and a speed of the motor;

determining if the parameter is outside of a range of programmed thresholds due to a foreign object obstruction in at least one of the pool and the spa;

executing an automatic recovery operation if the parameter is outside of the range of programmed thresholds in an attempt to clear the foreign object obstruction, the automatic recovery operation including at least one of generating an updated speed control command, driving the motor in a limp mode, shutting down the motor for up to about 30 seconds and then restarting the motor, and operating the motor in a reverse direction for up to about 30 seconds and then operating the motor in a forward direction; and

automatically shutting down the motor within up to about 30 seconds if the recovery operation fails and the foreign object obstruction cannot be cleared.

IX. Evidence Appendix

No evidence is being submitted herewith.

X. Related Proceedings Appendix

No copies of decisions rendered by a court or the Board are being submitted herewith.